12 • DOMINO • 12

AIRLINERS

A colour guide to modern airliners
38 aircraft types illustrated
Identification – performance

Air Liberia

Britten-Norman Islander. This was built as a private venture until financial problems forced its takeover by the Fairey Group. It is now built in Belgium, Romania and the Philippines, and finished in the Isle of Wight. There are also military, agricultural, fire-fighting and other versions. An attractive aircraft, designed along very simple lines to keep costs down. There is no aisle: eight passengers sit in four double bench seats, each with his own door, while a ninth sits beside the pilot. A version powered by two Lycoming turboprops cruises at about 200mph.
M: U.K. **D:** 67/68. **S:** 49. **L:** 36. **E:** 2 Lycoming piston. **P:** 9. **W:** 6. **S:** 165. **R:** 706. **O:** 900.

Britten-Norman Trislander. Developed from the Islander, by the simple expedient of adding 7½ feet of fuselage in front of the wing and putting another Lycoming engine in the tail fin. This third engine also gives a better ability to cope with a failure on take-off, so the plane is certified to a higher standard than most commuter aircraft. It is a little slow, but very manoeuvrable and can use small airstrips.
M: U.K. **D:** 70/71. **S:** 53. **L:** 44. **E:** 3 Lycoming piston. **P:** 18. **W:** 10. **S:** 165. **R:** 210. **O:** 50+.

Loganair, Scotland

Shorts Skyvan. In 1909 the Short brothers were building aircraft for the Wright brothers, and today the firm produces components for the Fokker Fellowship, the TriStar and the 747. Their short-range Skyvan looks like a flying box and needs only a 700-foot run for take-off. It carries up to 19 passengers or two tons of even quite large and bulky freight. Rather slow and noisy for the commuter market, it is a sturdy, practical aircraft; about half the sales have been in military versions.

M: U.K. **D:** 63/65. **S:** 65. **L:** 40. **E:** 2 Garrett-AiR tp. **P:** 19. **W:** 12. **S:** 205. **R:** 250. **O:** 125.

Summit, U.S.A.

Shorts SD3-30. Clearly derived from the Skyvan, the 3-30 looks much sleeker, with a longer fuselage and nose, and is much quieter in the cabin. Designed for the growing commuter market, it is flying in Holland, Scandinavia, West Germany, and with several US commuter lines. It is settling down well, attracting passengers and well liked by crews. In its military version, a large rear door opens and can take in a Land-Rover.

M: U.K. **D:** 74/76. **S:** 75. **L:** 58. **E:** 2 P&W (Canada) PT6A tp. **P:** 30. **W:** 22. **S:** 221. **R:** 450. **O:** 36.

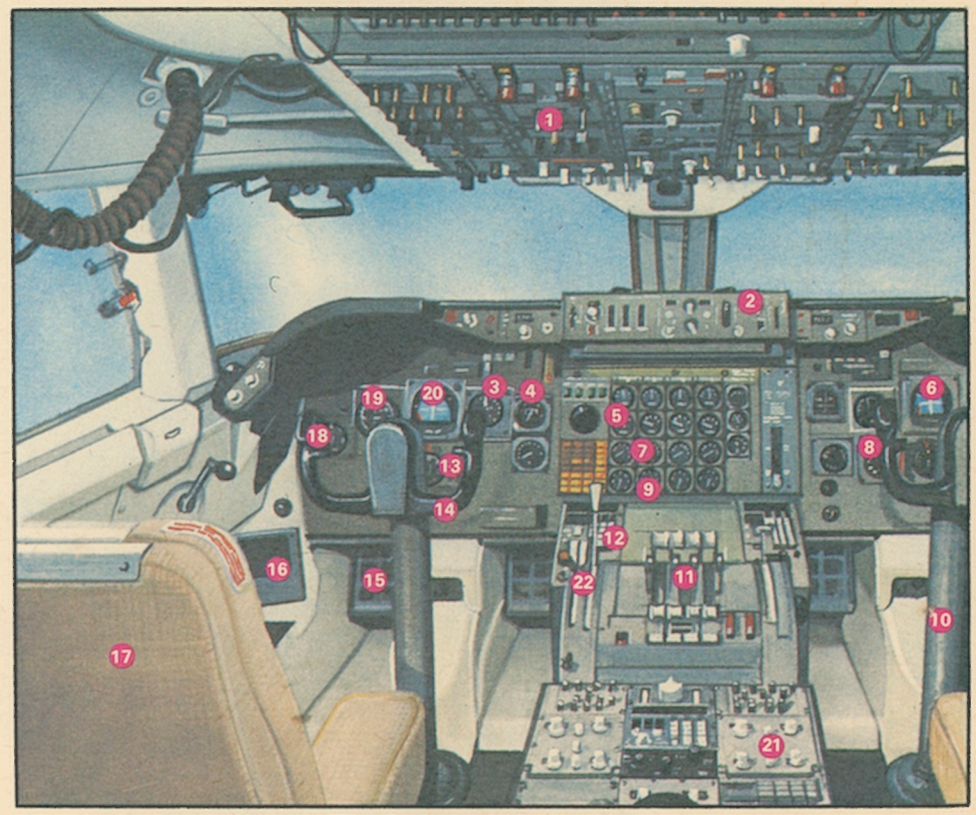
Golden West Airlines, U.S.A.

THIS Domino shows the principal types of passenger aircraft to be seen around the world today. It includes the now grounded Tu-144 as the first supersonic airliner ever: and a few like the Mercure whose days are numbered but which are still locally common. Other older aircraft like the Comet and Convairs are omitted, as are some earlier Russian types which are still numerous, and the smaller 'executive' aircraft.

Specifications are given only as a general guide. They can vary so much for any one type, as designs are continually modified to improve performance, to meet different airlines' requirements, or under political pressure. An aircraft may be built in a whole series of versions, sometimes differing conspicuously, as in length when 'stretched'. In particular, the engines are often changed.

M = country of manufacture
D = dates of first flight/first in service
S and **L** = span and length to the nearest foot
E = number and type of engines: Tf = turbofans, Tj = turbojets
P = typical max. passenger seats
W = max. take-off weight in 1,000lbs
S = max. cruising speed in mph
R = approx. range in miles, with max. payload
O = number ordered or delivered

Airliners continue to evolve, but the general pattern of the larger jets seems fairly settled for the immediate future. After migrating to the tail, engines have returned to the wings – four for long-range aircraft, otherwise two – and are quieter and more powerful. Bodies are wider, electronics for navigation and auto-flying ever more refined. The appearance of the Boeing 757 and 767 offers no surprises. The emphasis today is on greater economy and safety – though flying with most airlines has long been far safer than driving in a car.



The Cockpit of a Boeing 747

1 Engine start switches
2 Autoflight panel
3 Radio altimeter
4 Pressure altimeter
5 Power gauges
6 Artificial horizon
7 Temperature gauges
8 Radio compass
9 Fuel flow gauges
10 Co-pilot's control column
11 Throttle levers
12 Inertial navigation system
13 Heading indicator (compass)
14 Captain's control column
15 Rudder/brake pedals
16 Weather radar display
17 Captain's seat
18 Clock
19 Airspeed indicator
20 Artificial horizon
21 Radio and navigation controls
22 Pitch trim control

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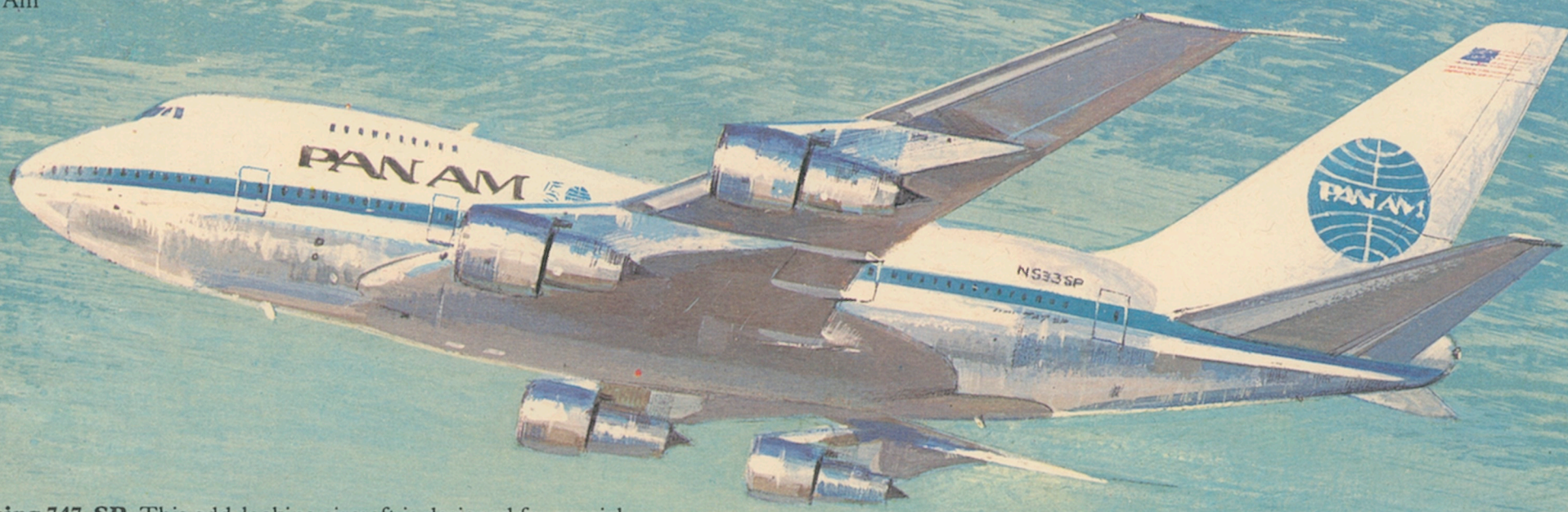
AIRLINE ILLUSTRATED:
Pan Am



Boeing 747-SP. This odd-looking aircraft is designed for special performance (thus the SP). By removing 46 feet from the centre section of the standard aircraft, and adding some fuel tankage, Boeing has tailored this version for very long-range, low-density routes. Seating approximately 300 passangers, it flies such sectors as New York to Tokyo and Tehran. In 1976 a delivery flight from the US West Coast to Cape Town flew 10,290 miles non-stop. On some of the longer flights a relief crew is carried.

Boeing 747. In spite of its affectionate nickname with aircrew, 'Fat Albert' is surprisingly sprightly to fly. Brought from drawing-board to service in record time, it was the first of the Jumbos, setting new standards of spaciousness and technology. Its vast cabin is split into sections, and from the front one a spiral staircase leads to an upper deck, used either as a lounge or for extra seating. Because of the 747's huge size and weight (double that of its precursors), runways were strengthened, taxiways widened and new hangers built all over the world. Air traffic control procedures were changed to keep other aircraft clear of its vortex But airport passenger facilities have still to catch up with its ability to disgorge anything up to 500 people at a time.

The drone of the 747's high by-pass fan engines is recognizable in the cabin and on the ground, and it has a characteristic sideways bounce in turbulence. It lands well, even though the pilot's eyes are 35 feet above the runway when the first of its 18 wheels touches down. And it needs special care in taxiing – rather like driving a house from the attic.

M: U.S.A. **D:** 69/70. **S:** 196. **L:** 231. **E:** 4 P&W JT9D tf. **P:** 500. **W:** 775. **S:** 610. **R:** 5,100. **O:** 444.

S.A.S.

JAL

McDonnell Douglas DC-10. Produced rather earlier than its rival, the Lockheed TriStar, the DC-10 has had the more successful sales record of the two and has been delivered to over 40 operators. Smaller than the 747, its cabin is still cavernous, and the galleys can be below floor level, with lifts bringing the food carts up to the service centre. Fully equipped for automatic landing, its advanced systems include 'direct lift control' for very quick response on approaches to land, and a navigation computer which can store all its routes. Designed to operate economically on routes between 300 and 6,100 miles in length, its short- and long-ranged versions encompass this easily, and the DC-10 is regularly flown on Polar routes between Europe and the West Coast of the U.S.A. The long-range version has an extra pair of wheels below the centre of the fuselage.

M: U.S.A. **D:** 70/71. **S:** 165. **L:** 182. **E:** 3 GE CF6-50 tf. **P:** 380. **W:** 572. **S:** 594.
R: 4,600 (long-range version 6,200). **O:** 312.

Lockheed L-1011 TriStar. The TriStar's sales have yet to catch up with those of its rival the DC-10, but it is a very popular aircraft. As in the DC-10, the standard of electronics is very high, some of them working full-time to stabilize it in flight and to smooth out the effect of gusts. As a result of its highly-developed systems, the roomy cockpit appears remarkably empty of instruments. The cabin is large and well-lit, giving a feeling of spaciousness even when filled with 400 economy-class passengers. Its three RB211 engines are quiet and efficient, but their development caused temporary financial disaster for Rolls-Royce. Slightly noisier than it should be in the rear part of the cabin, it flies with a high, nose-up attitude on final approach. Landings tend to be fairly firm. Fully equipped for automatic landing, it was certified before delivery for landings in fog.

M: U.S.A. **D:** 70/72. **S:** 155. **L:** 179. **E:** 3 RR RB211 tf. **P:** 345.
W: 430. **S:** 575. **R:** 2,900. **O:** 267.

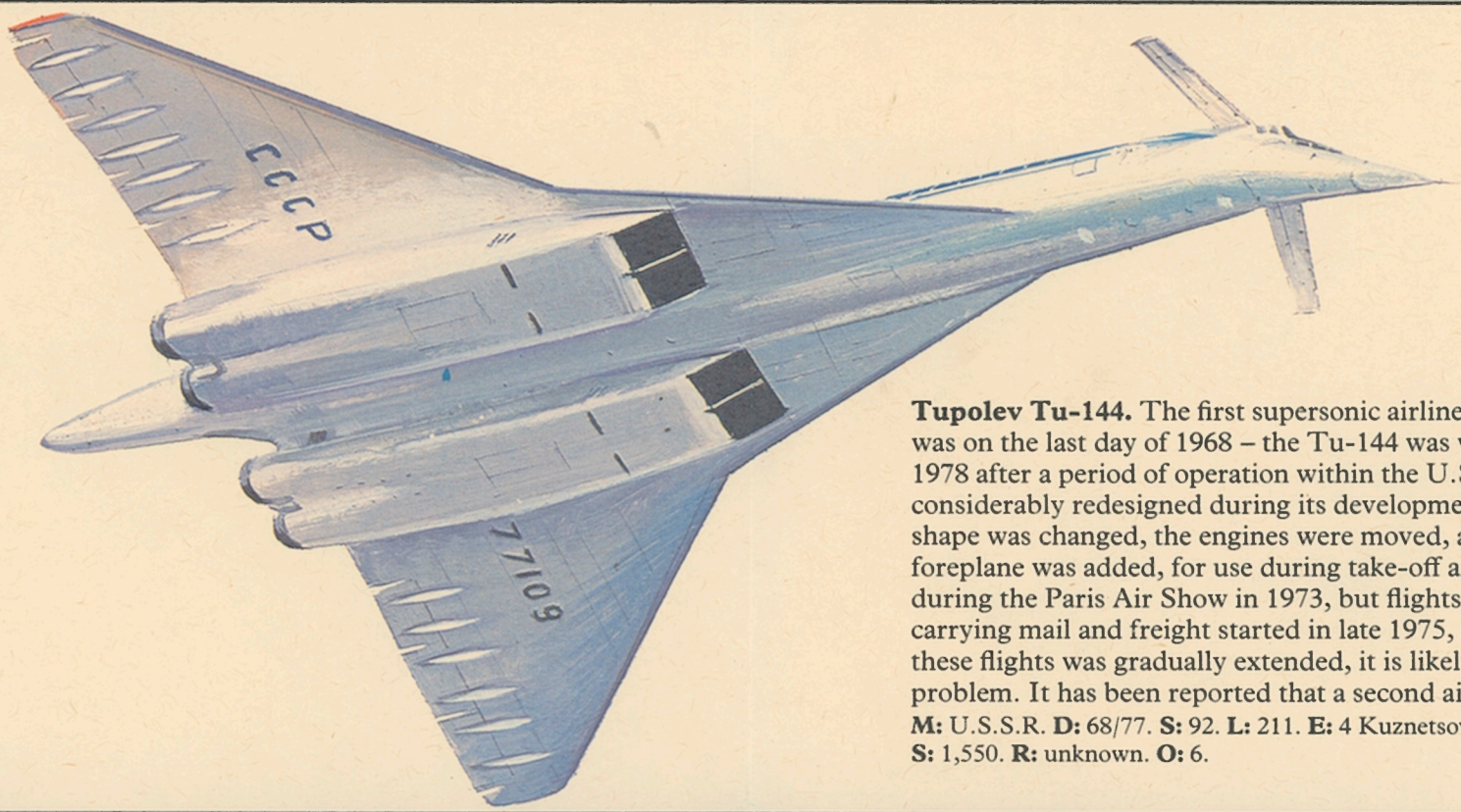
Gulf Air

K.L.M.

McDonnell Douglas DC-8. Designed at roughly the same time as its competitor the Boeing 707, and therefore one of the first jet airliners, it suffered some delays entering service, and the wingtips were redesigned to improve the performance of the long-range versions. Of the two it is the more stable, and passengers appreciate its good ride. With rather heavy controls, it is a little bus-like to fly, but it has no unpleasant habits. Instead of speed brakes, its reverse thrust can be used in the air. Easily distinguished by its cigar-like shape and its nose-down attitude when taxiing. Later, 'stretched' versions give it an even more distinctive length.

M: U.S.A. **D:** 58/60. **S:** 148. **L:** 187. **E:** 4 P&W JT3D tf. **P:** 259. **W:** 350. **S:** 585. **R:** 4,500. **O:** 556.

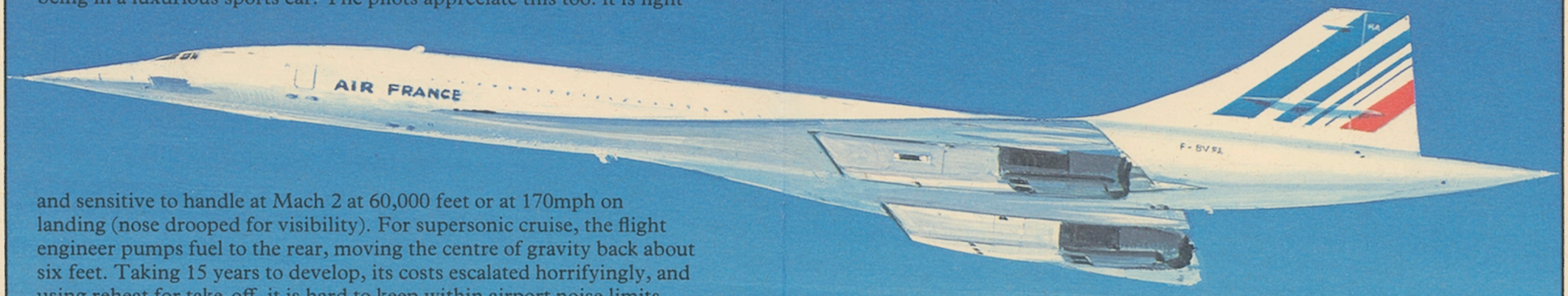
Aeroflot



Tupolev Tu-144. The first supersonic airliner to fly – its maiden flight was on the last day of 1968 – the Tu-144 was withdrawn from service in 1978 after a period of operation within the U.S.S.R. The aircraft was considerably redesigned during its development; in particular, the wing-shape was changed, the engines were moved, and a 'moustache' foreplane was added, for use during take-off and landing. One crashed during the Paris Air Show in 1973, but flights continued. Regular flights carrying mail and freight started in late 1975, and although the length of these flights was gradually extended, it is likely that range was always a problem. It has been reported that a second aircraft crashed in 1978.
M: U.S.S.R. **D:** 68/77. **S:** 92. **L:** 211. **E:** 4 Kuznetsov NK-144 tf. **P:** 140. **W:** 397. **S:** 1,550. **R:** unknown. **O:** 6.

Air France

Aérospatiale/British Aerospace (BAC) **Concorde** covers a mile every 2.7 seconds, and needs an indicator in the cabin to convince the passengers it is really happening. During take-off and climb, the narrow body and feeling of great power and acceleration give the impression of being in a luxurious sports car. The pilots appreciate this too: it is light

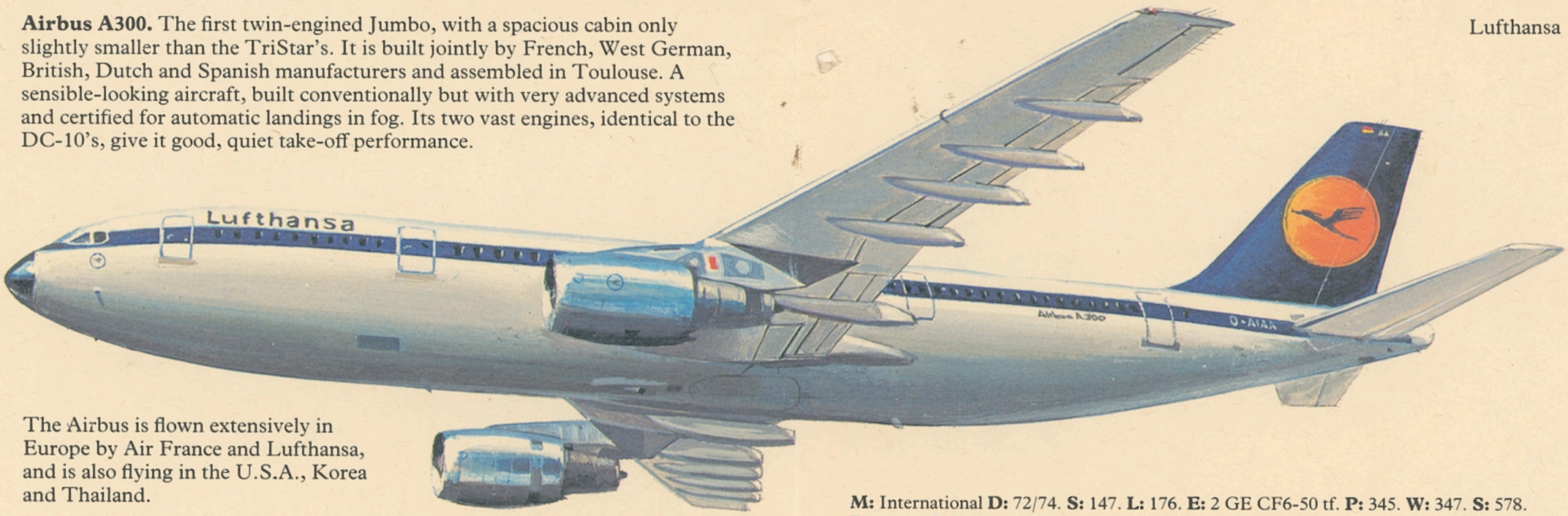


and sensitive to handle at Mach 2 at 60,000 feet or at 170mph on landing (nose drooped for visibility). For supersonic cruise, the flight engineer pumps fuel to the rear, moving the centre of gravity back about six feet. Taking 15 years to develop, its costs escalated horrifyingly, and using reheat for take-off, it is hard to keep within airport noise limits. Yet it has undoubtedly established a market for itself, and it is now in service (through leases) with Singapore Airlines and Braniff, as well as with British Airways and Air France.

M: U.K./France. **D:** 69/76. **S:** 84. **L:** 204. **E:** 4 RR/SNECMA Olympus 593 tj. **P:** 100. **W:** 400. **S:** 1,450. **R:** 3,870. **O:** 9.

Airbus A300. The first twin-engined Jumbo, with a spacious cabin only slightly smaller than the TriStar's. It is built jointly by French, West German, British, Dutch and Spanish manufacturers and assembled in Toulouse. A sensible-looking aircraft, built conventionally but with very advanced systems and certified for automatic landings in fog. Its two vast engines, identical to the DC-10's, give it good, quiet take-off performance.

Lufthansa



The Airbus is flown extensively in Europe by Air France and Lufthansa, and is also flying in the U.S.A., Korea and Thailand.

M: International **D:** 72/74. **S:** 147. **L:** 176. **E:** 2 GE CF6-50 tf. **P:** 345. **W:** 347. **S:** 578. **R:** 2,620. **O:** 124.

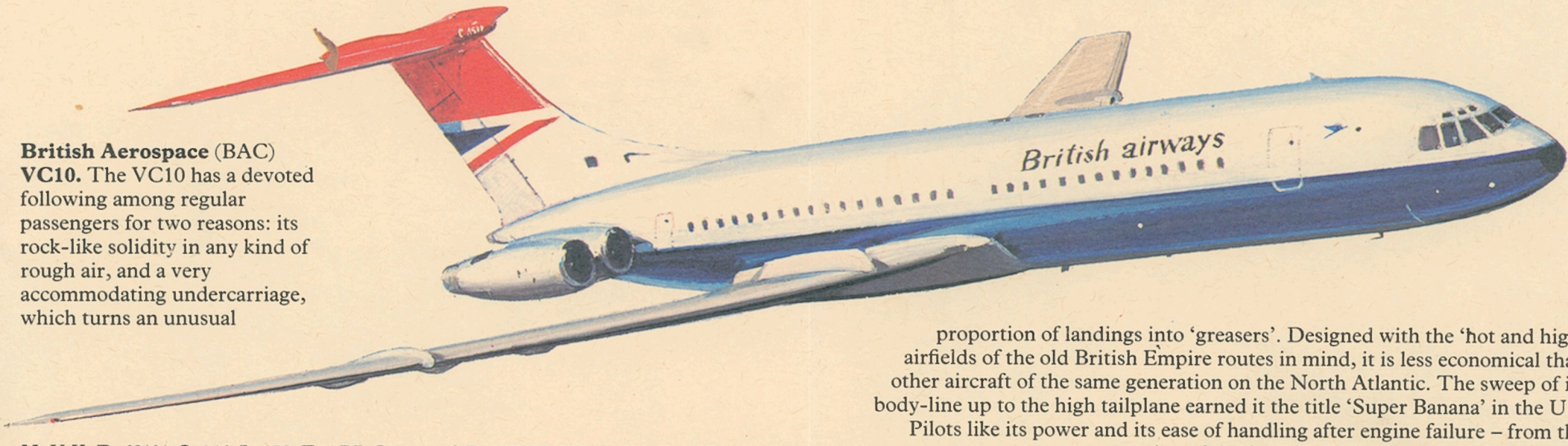
Boeing 707. The most extensively used of the first generation of jets, it quickly pushed the remaining piston-engined aircraft off the routes, chiefly because its mechanically simpler engines needed removing after periods of thousands rather than hundreds of hours. A most efficient aircraft, very reliable, and with well-designed passenger and galley accommodation, it has earned the respect of aircrew – although some 'jet upsets' were experienced early on, before pilots learned the new game. It has always been a demanding aircraft to fly well, particularly in crosswinds, because of its heavy sweep-back, narrow-track undercarriage and low engine pods; but pilots soon adapt to this and find it very satisfying.

Avianca

M: U.S.A. **D:** 54/58. **S:** 146. **L:** 153. **E:** 4 P&W JT3D-7 tf. **P:** 189. **W:** 333. **S:** 600. **R:** 4,300. **O:** 930.

British Airways

British Aerospace (BAC) **VC10.** The VC10 has a devoted following among regular passengers for two reasons: its rock-like solidity in any kind of rough air, and a very accommodating undercarriage, which turns an unusual proportion of landings into 'greasers'. Designed with the 'hot and high' airfields of the old British Empire routes in mind, it is less economical than other aircraft of the same generation on the North Atlantic. The sweep of its body-line up to the high tailplane earned it the title 'Super Banana' in the US. Pilots like its power and its ease of handling after engine failure – from the grouping of the four engines close together at the tail.



M: U.K. **D:** 62/64. **S:** 146. **L:** 172. **E:** 4 RR Conway tf. **P:** 187. **W:** 335. **S:** 580. **R:** 4,720. **O:** 40.

British Aerospace (Hawker Siddeley) **Trident.** Used mainly by British Airways in Europe, the Trident will be remembered for its pioneering role in automatic flight. Certified to land in zero visibility, it can also take off when most other aircraft are fog-bound. Pleasant to fly manually, but a little hard to land well. Passengers, some of whom sit in rearward-facing seats, often notice the automatic throttles changing the engine power on approach, in response to gusts. It has an offset nosewheel and, in the Trident III version, five engines – three for normal use, a boost engine (with plastic compressor blades) for 'hot and high' take-offs, and an auxiliary power unit for ground services.

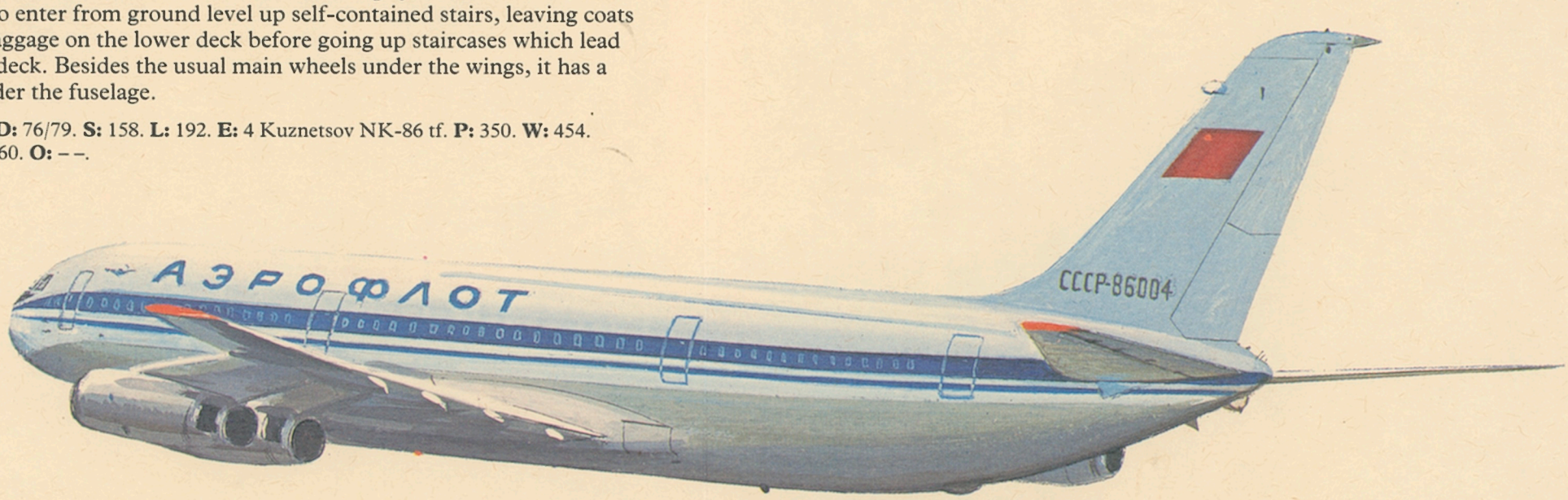
M: U.K. **D:** 62/64. **S:** 98. **L:** 115. **E:** 3 RR Spey tf, 1 RR boost jet. **P:** 180. **W:** 143. **S:** 595. **R:** 2,860. **O:** 117.

British Airways

Ilyushin Il-86. The first Soviet Jumbo made its maiden flight on 22nd December 1976. It is intended for medium ranges, and has a wide-bodied cabin with two aisles. An unusual boarding system allows passengers to enter from ground level up self-contained stairs, leaving coats and hand-baggage on the lower deck before going up staircases which lead to the main deck. Besides the usual main wheels under the wings, it has a third set under the fuselage.

M: U.S.S.R. **D:** 76/79. **S:** 158. **L:** 192. **E:** 4 Kuznetsov NK-86 tf. **P:** 350. **W:** 454. **S:** 590. **R:** 1,460. **O:** – –.

Aeroflot



Boeing 727. Boeing departed from their own traditions when in 1960 they designed the short/medium range 727 with three engines at the rear of the fuselage. It worked: the 727 became the first commercial jetliner to reach over 1,000 sales. There are now about 1,500 flying, and ten more are being produced each week. Its upper fuselage section is identical to that of the earlier 707, and it shares many common parts, though all its controls are fully powered by hydraulics. Ingenious flaps and slats give it a good take-off performance with a load of 163 passengers. The cabin, in the latest version, has been given a wide-bodied look by the use of mouldings and lighting. Very popular with aircrew, it is precise and light to fly, and it has a good safety record.

M: U.S.A. **D:** 63/64. **S:** 108. **L:** 153. **E:** 3 P&W JT8D tf. **P:** 189. **W:** 209. **S:** 600. **R:** 2,800. **O:** 1,631

Continental

Balkan

Tupolev Tu-154. About 200 Tu-154's have been produced, starting some five years after the Boeing 727, which it closely resembles. With slats on the leading edges of the wings and triple-slotted flaps on the trailing edges, its take-off performance is very good. The main landing-gear bogies have six wheels each and retract into fairings which stick out behind the wings. All its control surfaces are hydraulically powered, and later versions are equipped for automatic landing. Navigation is done by a computer, and displayed on a moving map. This aircraft appears to be one of the most efficient of the Soviet fleet.

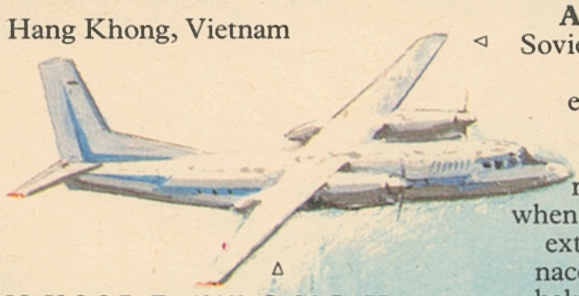
M: U.S.S.R. **D:** 68/72. **S:** 123. **L:** 157.
E: 3 Kuznetsov NK-8-2 tf. **P:** 167. **W:** 212. **S:** 590. **R:** 1,710. **O:** 200+.

McDonnell Douglas DC-9. Since entering service with Delta Airlines in December 1965, the DC-9 has grown from an original payload of 80 passengers to a maximum of 139 in 'stretched' versions. As well as being one of the staple short/medium range airliners it has been adapted for military use – as a transport for the US Navy and as an ambulance with special care facilities. The later, Series 50, version went into service with Swissair in August 1975. This has had the 'wide-body' treatment, with overhead racks for baggage and clever use of panels and lighting to give a spacious effect. It also meets the severe new US noise regulations.

Texas International

M: U.S.A. **D:** 65/65. **S:** 93. **L:** 132. **E:** 2 P&W JT8D tf. **P:** 139. **W:** 120. **S:** 565. **R:** 1,500. **O:** 1,000.

Hang Khong, Vietnam



M: U.S.S.R. **D:** 60/63. **S:** 96. **L:** 77.
E: 2 Ivchenko AI-24A tp. **P:** 50. **W:** 46.
S: 310. **R:** 350. **O:** 1,000+.

Antonov An-24. This hard-working Soviet aircraft looks very like the Fokker Friendship but for its more bulky engines and sloping tail-fin. It is also heavier, which restricts its range. Designed to take off from unpaved runways, it needs quite a lot of room when fully loaded. One version carries an extra turbojet engine in the right-hand nacelle, to start the main engines and to help in the event of an engine failure. It is used by the air forces of several developing countries.

Ilyushin Il-62. Looks very like the British VC10, only rather more angular. Its four engines give it transatlantic range, and it started Aeroflot's services to New York in 1968. A later version has more powerful engines and an extra fuel tank inside the tail fin, allowing it to carry up to 186 passengers over about 5,000 miles. It has the reputation of being heavy to handle: all its control surfaces are manually operated, except the 'all-flying' tailplane, which is moved electrically.

M: U.S.S.R. **D:** 63/67. **S:** 142. **L:** 174. **E:** 4 Kuznetsov NK-8-4 tf. **P:** 186. **W:** 357. **S:** 550. **R:** 4,200. **O:** 150.

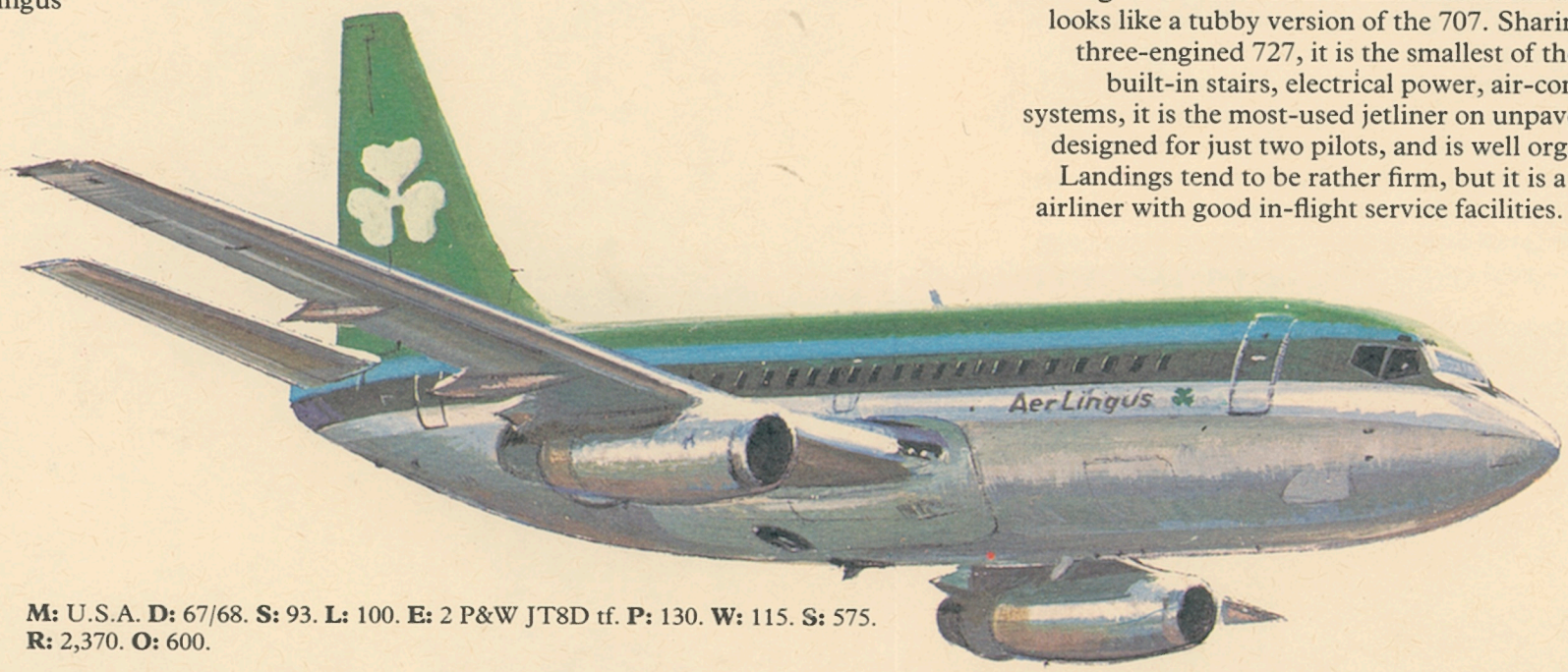
CAAC, Peoples Republic of China

TAROM, Romania

M: U.K. **D:** 63/65. **S:** 92. **L:** 107. **E:** 2 RR Spey tf. **P:** 119. **W:** 104. **S:** 540. **R:** 1,500. **O:** 220+.

British Aerospace (BAC) **One-Eleven.** First ordered by BUA in 1961, the One-Eleven has been the most successful British-built jet: over 200 have been sold. During its testing, a new problem peculiar to high T-tail aircraft, the 'deep stall', led to a fatal crash. A solution was found, and since then it has gone on to fly short/medium routes all over the world, mainly in Europe, the U.S.A., South America and South-east Asia. It is well-equipped for quick turn-rounds and lands well, on a forgiving undercarriage. Some are built under licence in Romania. There are also executive, freighter and rough-field versions.

Aer Lingus



M: U.S.A. **D:** 67/68. **S:** 93. **L:** 100. **E:** 2 P&W JT8D tf. **P:** 130. **W:** 115. **S:** 575. **R:** 2,370. **O:** 600.

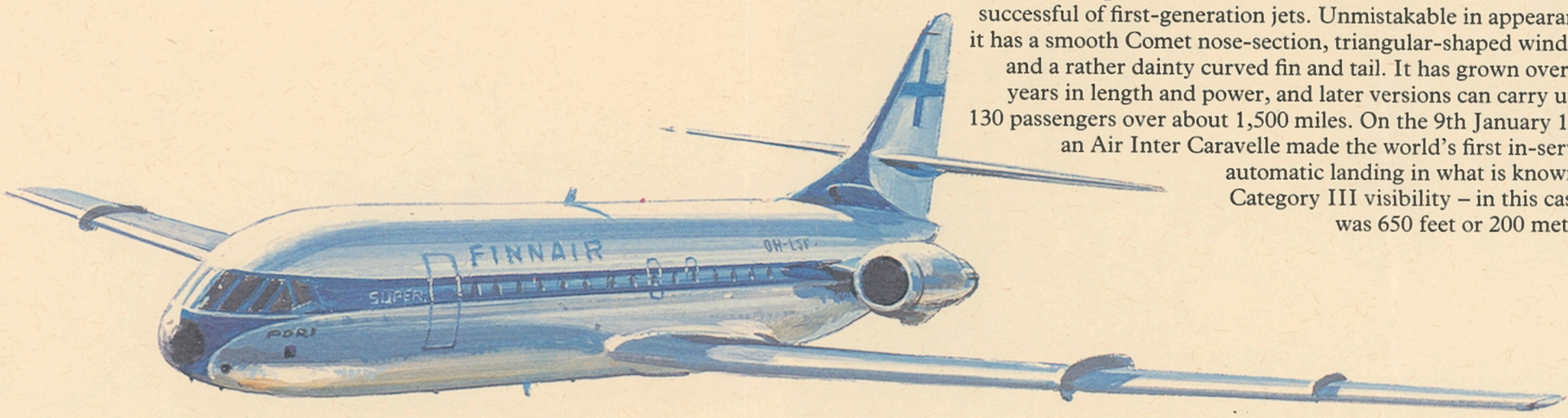
Boeing 737. Wider-bodied than most small airliners, the twin-engined 737 looks like a tubby version of the 707. Sharing many components with the three-engined 727, it is the smallest of the Boeing family. With its own built-in stairs, electrical power, air-conditioning and engine starting systems, it is the most-used jetliner on unpaved surfaces. The flight deck is designed for just two pilots, and is well organized for quick turn-rounds. Landings tend to be rather firm, but it is a very comfortable short-range airliner with good in-flight service facilities. A business jet version has the range to cross the Atlantic.

Aviaction, W. Germany

Fokker-VFW F28 Fellowship. This rather attractive short-haul jetliner had its development funded by the Dutch government, and is built in sections in Holland, West Germany and Britain. Its engines have acoustic liners and silencers, and it carries 85 passengers with low take-off and landing noise levels. So far its sales have been modest – about 130. An unusual feature are the 'petal' airbrakes, which unfold from either side of the tail cone. A successor is being designed, with newly developed engines and carrying up to 120 passengers.

M: Holland. **D:** 67/69. **S:** 77. **L:** 90. **E:** 2 RR Spey tf. **P:** 85. **W:** 65. **S:** 525. **R:** 1,100. **O:** 141.

Finnair

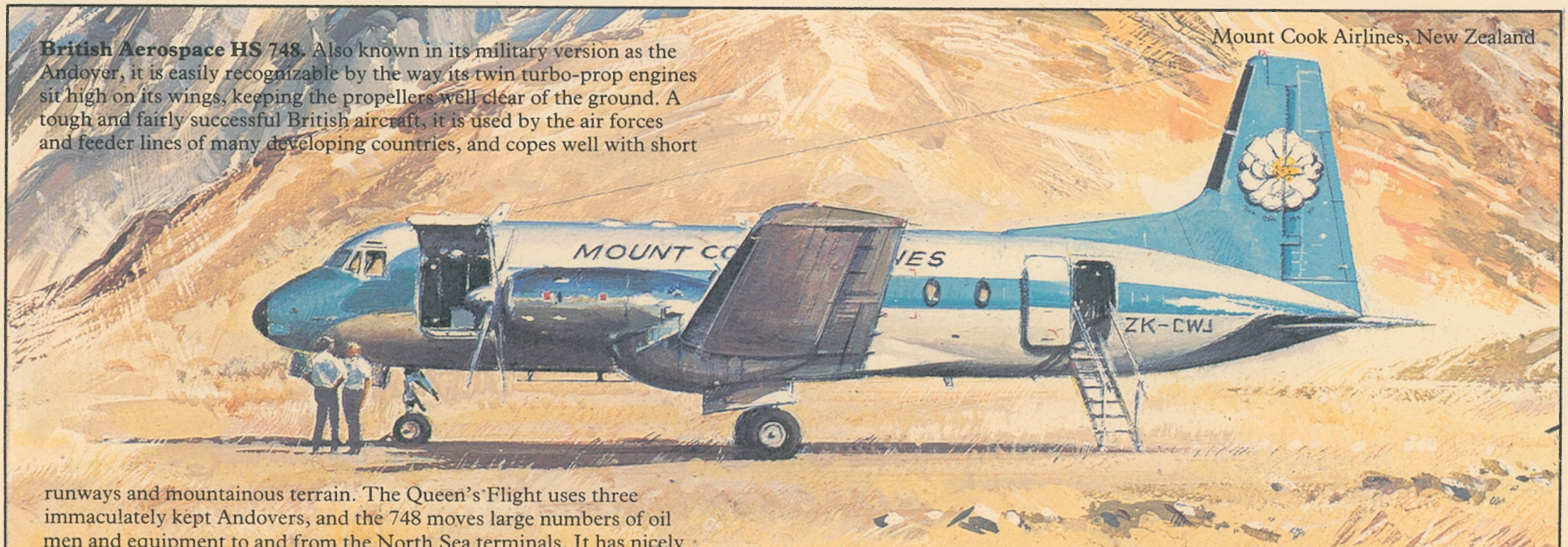


Aérospatiale Caravelle. This has been one of the most successful of first-generation jets. Unmistakable in appearance, it has a smooth Comet nose-section, triangular-shaped windows and a rather dainty curved fin and tail. It has grown over the years in length and power, and later versions can carry up to 130 passengers over about 1,500 miles. On the 9th January 1969 an Air Inter Caravelle made the world's first in-service automatic landing in what is known as Category III visibility – in this case it was 650 feet or 200 metres.

M: France. **D:** 55/59. **S:** 112. **L:** 105. **E:** 2 P&W JT8D tf. **P:** 130. **W:** 101. **S:** 500. **R:** 1,400. **O:** 282.

British Aerospace HS 748. Also known in its military version as the Andover, it is easily recognizable by the way its twin turbo-prop engines sit high on its wings, keeping the propellers well clear of the ground. A tough and fairly successful British aircraft, it is used by the air forces and feeder lines of many developing countries, and copes well with short runways and mountainous terrain. The Queen's Flight uses three immaculately kept Andovers, and the 748 moves large numbers of oil men and equipment to and from the North Sea terminals. It has nicely balanced flying controls and very good visibility from the flight deck. The cabin is rather noisy.

Mount Cook Airlines, New Zealand



M: U.K. **D:** 60/62. **S:** 98. **L:** 67. **E:** 2 RR Dart tp. **P:** 58. **W:** 44. **S:** 280. **R:** 850. **O:** 359.

VFW-Fokker VFW 614. No one could fail to recognize this aircraft, with its two engines mounted on pylons above the wings. This was adopted to protect the engines when operating from unprepared surfaces, and to reduce take-off and landing noise by using the wing as a sound shield. Designed by a West German combine, including the famous names of Heinkel and Focke-Wulf, it perhaps shows some evidence of its lineage in the shape of its nose section. Still a comparatively rare bird, used by French and West German airlines and the Luftwaffe.

TAT, France

M: W. Germany. **D:** 71/75. **S:** 71. **L:** 68. **E:** 2 RR/SNECMA M45H tf. **P:** 40. **W:** 44. **S:** 450. **R:** 748. **O:** 10.

Norontair, Canada

△

De Havilland DHC-6 Twin Otter. De Havillands of Canada have always built tough little aeroplanes, capable of working in Canada's bleak flying conditions. A simple, practical aircraft, the Twin Otter flies on ambulance, forestry and military missions, and as a commuter airliner. Its fixed undercarriage may be bare, fitted with 'spats' for commuter work, with ski-wheel combinations for snow, with fat tyres for rough airstrips, or with floats for island-hopping. It is unpressurized, and rather noisy in the cabin, but needs remarkably little room for take-off and landing. The pilots share a branched control column and use throttles mounted in the cockpit roof.
M: Canada. **D:** 65/68. **S:** 65. **L:** 52. **E:** 2 P&W (Canada) PT6A tp. **P:** 20. **W:** 12. **S:** 210. **R:** 115. **O:** 600.

De Havilland DHC-7 Dash-7. A much newer type of aircraft than it looks, it was designed from scratch as a quiet STOL (short take-off and landing) airliner. Hardly noisier than a sewing machine, its take-off performance and ability to do steep approaches make it suitable for linking downtown city airports and operating into short airstrips. Its first route was to and from the mountain ski resort of Aspen, Colorado. The cabin is pressurized and has extra space under the seats for carry-on baggage. Unusually for a modern aircraft of its size and range, it has four engines.

▽

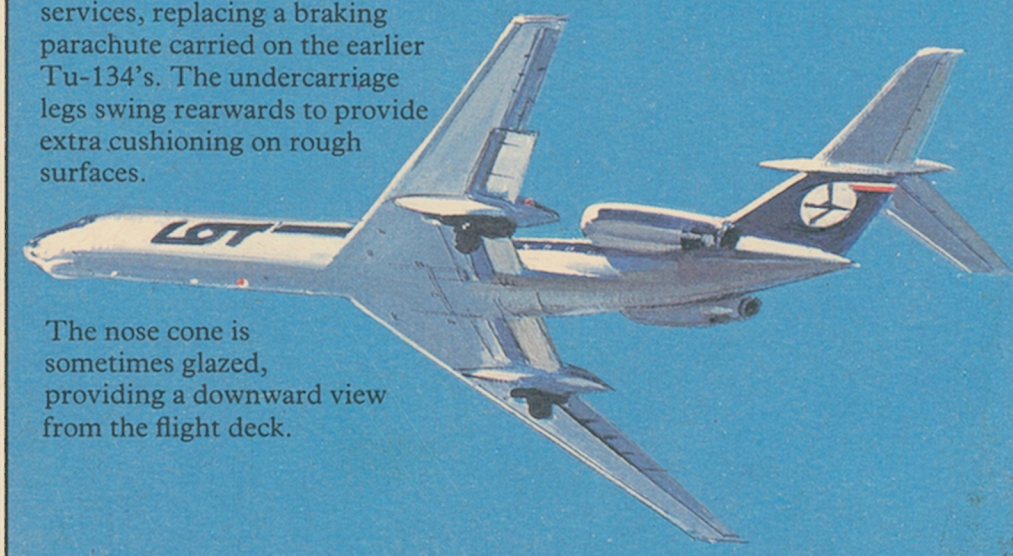
M: Canada. **D:** 75/77. **S:** 93. **L:** 80.
E: 4 P&W (Canada) PT6A tp. **P:** 54. **W:** 43. **S:** 269.
R: 935. **O:** 35.

(manufacturer's colours)

Dassault-Breguet Mercure. A large-capacity short-haul airliner, flying only on internal routes in France. But a possible new version, the Mercure 200, is being studied by Dassault and McDonnell Douglas. With more powerful engines, improved wing-flaps and a lengthened fuselage, this would carry 160 passengers up to 2,000 miles.
M: France. **D:** 71/74. **S:** 100. **L:** 114.
E: 2 P&W JT8D tf. **P:** 155. **W:** 124.
S: 570. **R:** 500. **O:** 10.

Air Inter, France

Tupolev Tu-134A. Developed as the Tu-134 at about the same time as the DC-9, it has the same engine layout, a rather more stalky undercarriage and a squarer fin. The wings 'have anhedral' – they droop downwards, away from the fuselage. The tail cone contains an auxiliary power unit for ground services, replacing a braking parachute carried on the earlier Tu-134's. The undercarriage legs swing rearwards to provide extra cushioning on rough surfaces.



The nose cone is sometimes glazed, providing a downward view from the flight deck.

M: U.S.S.R. **D:** 62/67. **S:** 95. **L:** 120. **E:** 2 Soloviev tf.
P: 80. **W:** 98. **S:** 560. **R:** 1,240. **O:** 250+.

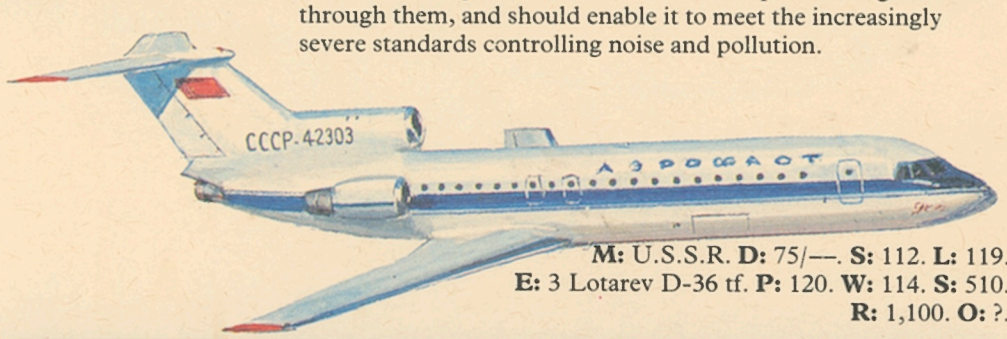
LOT, Poland

ČSA

M: U.S.S.R. **D:** 66/68. **S:** 82. **L:** 67. **E:** 3 Yevchenko Al-25 tf. **P:** 32. **W:** 36. **S:** 340. **R:** 1,100. **O:** 1,000+.

Yakovlev Yak-40. The Yak-40 is an unusual and attractive-looking aeroplane, which has no real equivalent in the West. Larger than most executive aircraft, but smaller than the usual short-range feederliners. It can operate from grass airfields, carries its own power unit for engine starting, and is the most widely-used short-range aircraft in the U.S.S.R. Some have been sold in Italy, France and West Germany.

Yakovlev Yak-42. Based on the Yak-40, a short-haul airliner designed for economy and easy maintenance and will operate mainly on feederliner services connecting the main trans-U.S.S.R. routes. Its three turbofans push five times as much air past the engines as through them, and should enable it to meet the increasingly severe standards controlling noise and pollution.



M: U.S.S.R. **D:** 75/—. **S:** 112. **L:** 119. **E:** 3 Lotarev D-36 tf. **P:** 120. **W:** 114. **S:** 510. **R:** 1,100. **O:** ?.

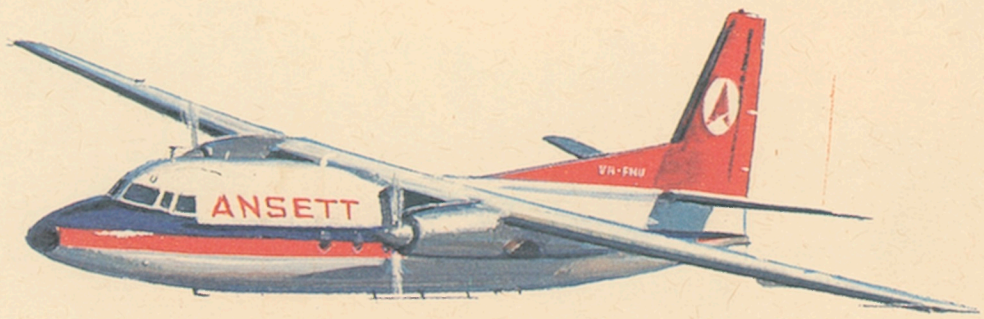
NAMC YS-11. Very similar in appearance to the HS 748, it is about a quarter as big again. Its main wheels retract forwards into the bulge below the engine nacelles. Designed and manufactured by a combine of major Japanese firms, it represented Japan's entry into the civil aircraft market after World War II. It

All Nippon Airways

has sold about 180, mainly in Japan but also in the Philippines, Greece, Indonesia, South America and the U.S.A. – where Piedmont Airlines operate them.

M: Japan. **D:** 62/65. **S:** 105. **L:** 86. **E:** 2 RR Dart tp. **P:** 60. **W:** 54. **S:** 450. **R:** 700. **O:** 182.

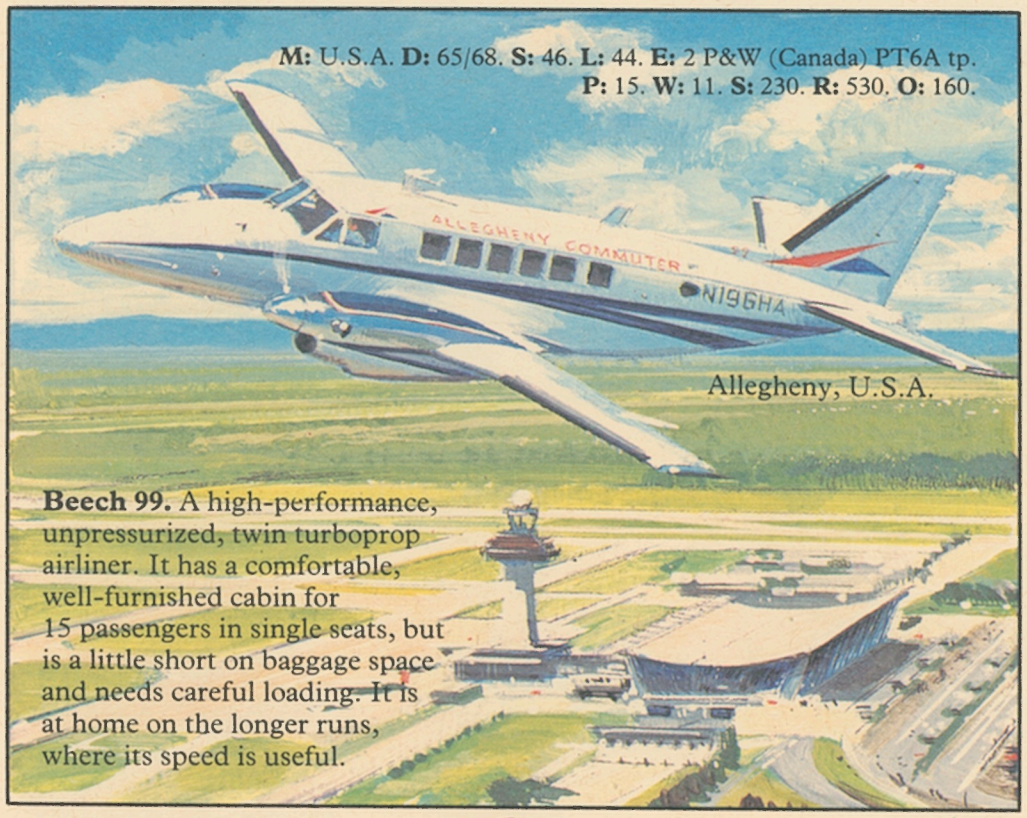
Fokker-VFW F27 Friendship. Seeming to have the right combination of comfort, strength and simplicity, this is probably the nearest yet to the elusive 'Dakota replacement'. Its high wings keep its engines and propellers clear of stones and dirt, yet their undersides are still accessible for maintenance.



Ansett, Australia

It is pleasant to fly, if somewhat rigid in turbulence. Fokkers designed some of the first airliners in the 1920s, and are now in partnership with the West German company VFW.

M: Holland. **D:** 58/58. **S:** 95. **L:** 77. **E:** 2 RR Dart tp. **P:** 52. **W:** 45. **S:** 300. **R:** 1,200. **O:** 691.

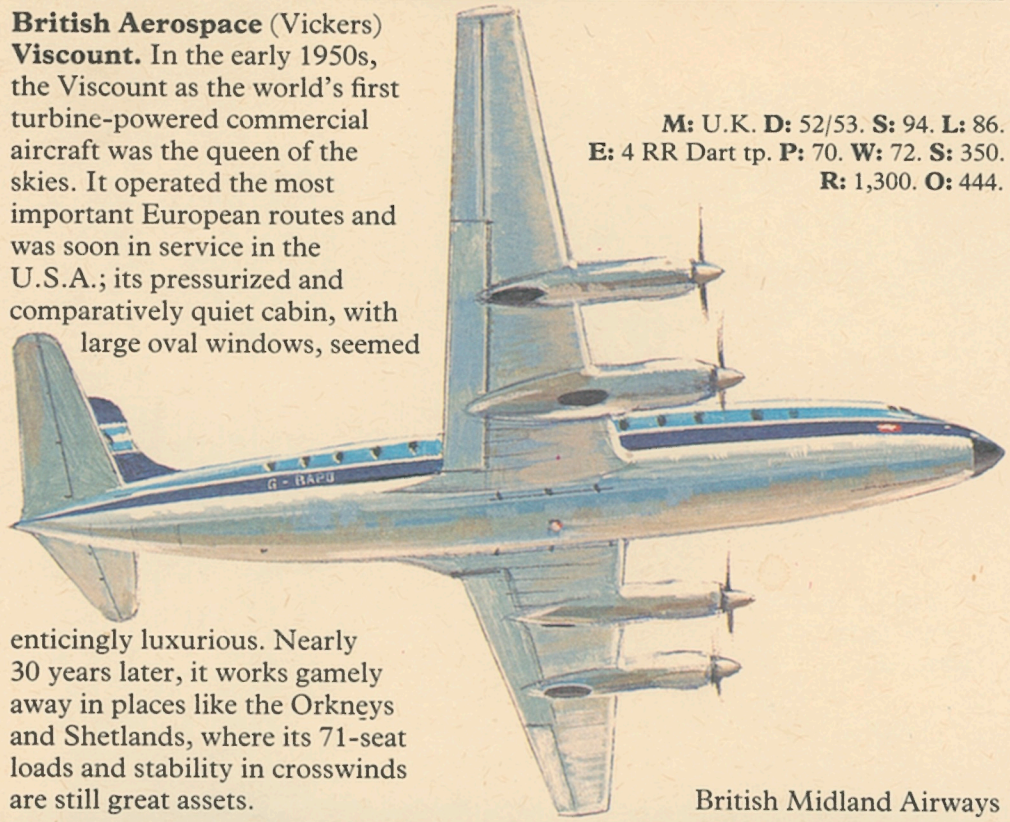


M: U.S.A. **D:** 65/68. **S:** 46. **L:** 44. **E:** 2 P&W (Canada) PT6A tp. **P:** 15. **W:** 11. **S:** 230. **R:** 530. **O:** 160.

Allegheny, U.S.A.

Beech 99. A high-performance, unpressurized, twin turboprop airliner. It has a comfortable, well-furnished cabin for 15 passengers in single seats, but is a little short on baggage space and needs careful loading. It is at home on the longer runs, where its speed is useful.

British Aerospace (Vickers) **Viscount.** In the early 1950s, the Viscount as the world's first turbine-powered commercial aircraft was the queen of the skies. It operated the most important European routes and was soon in service in the U.S.A.; its pressurized and comparatively quiet cabin, with large oval windows, seemed



M: U.K. **D:** 52/53. **S:** 94. **L:** 86. **E:** 4 RR Dart tp. **P:** 70. **W:** 72. **S:** 350. **R:** 1,300. **O:** 444.

enticingly luxurious. Nearly 30 years later, it works gamely away in places like the Orkneys and Shetlands, where its 71-seat loads and stability in crosswinds are still great assets.

British Midland Airways

Tejas, U.S.A.

Swearingen Metro. The growth of the commuter market in the U.S.A., linking groups of quite small towns with major cities, has led to the development of special aircraft for this purpose. The Metro is one of these: pressurized, fast and comfortable, with 19 passengers sitting in single seats. There is a baggage compartment in the long nose, and a cargo space at the rear with a large door. It is in service with 20 airlines: Air Wisconsin, its largest operator, carries 30,000 passengers and 250 tonnes of freight every month. **M:** U.S.A. **D:** 70/71. **S:** 43. **L:** 59. **E:** 2 Garrett-AiR tp. **P:** 22. **W:** 12. **S:** 295. **R:** 100. **O:** 40.

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AIRLINERS

THE FIRST things to note for identifying airliners are the number and placing of engines, and shapes of tail-sections. The quick key below shows jet-powered types in current general use, omitting the unmistakable Concorde and VFW 614.

Four engines on wings

Boeing 707

DC-8

Il-86

Boeing 747

Two engines on wings

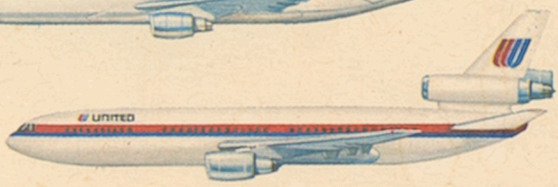
Boeing 737

Mercure

A300 Airbus

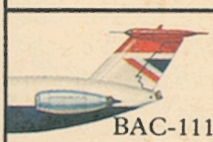
Two engines on wings, one at rear

TriStar

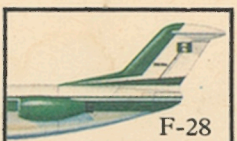


DC-10

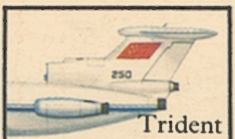
All engines at rear



BAC-111



F-28

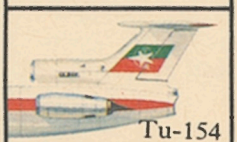


Trident

Yak-42

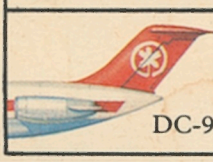
Caravelle

Tu-134



Tu-154

Il-62



DC-9

727

Yak-40

VC-10

U.K. 85p

ISBN 0 00 685455 9

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AIRLINERS

A colour guide to modern airliners 38 aircraft types illustrated identification–performance

ORIGINAL ILLUSTRATION
Pan Am

Boeing 747-SP. This odd-looking aircraft is designed for special performance (thus the SP). By removing 46 feet from the centre section of the standard aircraft, and adding some fuel tankage, Boeing has tailored this version for very long-range, low-density routes. Seating approximately 300 passengers, it flies such sectors as New York to Tokyo and Teheran. In 1976 a delivery flight from the US West Coast to Cape Town flew 10,290 miles non-stop. On some of the longer flights a relief crew is carried.

Boeing 747. In spite of its affectionate nickname with aircrew, 'Fat Albert' is surprisingly sprightly to fly. Brought from drawing-board to service in record time, it was the first of the Jumbos, setting new standards of spaciousness and technology. Its vast cabin is split into sections, and from the front one a spiral staircase leads to an upper deck, used either as a lounge or for extra seating. Because of the 747's huge size and weight (double that of its precursors), runways were strengthened, and taxiways widened, at many airports around the world. Air traffic control procedures were changed to keep other aircraft clear of its vortex. But airport passenger facilities have still to catch up with its ability to disgorge anything up to 500 people at a time.

The drone of the 747's high by-pass fan engines is recognisable in the cabin and on the ground, and it has a characteristic sideways bounce in turbulence. It lands well, even though the pilot's eyes are 35 feet above the runway when the first of its 18 wheels touches down. And it needs special care in taxiing – rather like driving a house from the attic.
M: U.S.A. Dt 66/76. St 196. Ex 211. Rt 4 P&W JT9D tf. Pt 350. Wt 775. Rt 633. R: 5,100. Alt 644.

S.A.S.

IAC

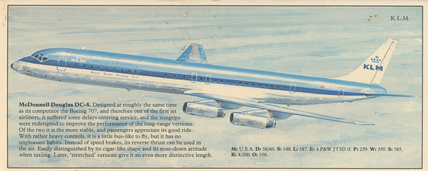
McDonnell Douglas DC-10. Produced rather earlier than its rival, the Lockheed TriStar, the DC-10 has proved the more successful sales record of the two and has been delivered to over 40 operators. Smaller than the 747, it is also smaller than the Lockheed 1011 TriStar. It is a wide-bodied, twin-jet keeping the fuel carts up to the service centre, fully equipped for automatic landing; its advanced systems include 'direct lift control' for very quick response on approaches to land, and a navigation computer which can store all its routes. Designed to operate economically on routes between 300 and 6,500 miles in length, its short- and long-ranged versions encompass this easily, and the DC-10 is regularly flown on Polar routes between Europe and the West Coast of the U.S.A. The long-range version has an extra pair of wheels below the centre of the fuselage.

M: U.S.A. Dt 70/71. St 161. Lt 182. Rt 3 GE CF6-50 tf. Pt 380. Wt 572. Rt 394. R: 4,600 (long-range version 6,200). Alt 312.

Lockheed L-1011 TriStar. The TriStar's sales have yet to catch up with those of its rival the DC-10, but it is a very popular aircraft. As in the DC-10, the standard of electronics is very high, some of them working full-time to stabilise it in flight and to smooth out the effect of gusts. As a result of its highly-developed systems, the roomy cockpit appears remarkably empty of instruments. The cabin is large and well-lit, giving a feeling of spaciousness even when filled with 400 economy-class passengers. Its three RB211 engines are quiet and efficient, but their development caused temporary financial disaster for Rolls-Royce. Slightly noisier than it should be in the rear part of the cabin, it flies with a high, nose-up attitude on final approach. Landings tend to be fairly firm. Fully equipped for automatic landing, it was certified before delivery for landings in fog.

Gulf Air

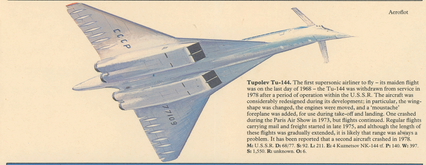
K.L.M.



McDonnell Douglas DC-8. Designed at roughly the same time as its competitor the Boeing 707, and therefore out-of-the-race in airliners, it suffered some delays entering service, and the wiggles were redesigned to improve the performance of the long-range versions. Of the two it is the more stable, and passengers appreciate its good ride. With rather heavy controls, it is a little bus-like to fly, but it has no unpleasant habits. Instead of speed brakes, its reverse thrust can be used in the air. Easily distinguished by its cigar-like shape and its nose-down attitude when taxiing. Later, 'stretched' versions give it an even more distinctive length.

M: U.S.A. Dt 58/60. St 148. Lt 187. Rt 4 P&W JT3D tf. Pt 259. Wt 393. St 585. R: 4,300. Alt 556.

Aeroflot



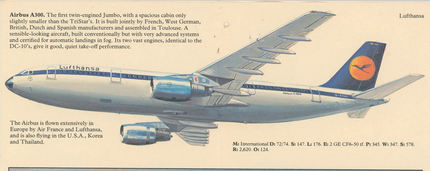
Tupolev Tu-144. The first supersonic airliner to fly – its maiden flight was on the last day of 1968 – the Tu-144 was withdrawn from service in 1978 after a period of operation within the U.S.S.R. The aircraft was considerably redesigned during its development; in particular, the wing-shape was changed, the engines were moved, and a 'moustache' foreplane was added, for use during take-off and landing. One crashed during the Paris Air Show in 1973, but flights continued. Regular flights carrying mail and freight started in late 1975, and although the length of the aircraft's nose made visibility poor, the pilots got used to it and it was a problem. It has been reported that a second Tu-144 crashed in 1978.
M: U.S.S.R. Dt 66/77. St 92. Lt 211. Rt 4 Kuznetsov NK-144 tf. Pt 140. Wt 397. S: 1,950. Rt unknown. Oc 6.

Air France

Aerospatiale-British Aerospace (BAC) **Concorde** covers a mile every 2.7 seconds, and needs an inclinometer in the cabin to convince the passengers it is really happening. During take-off and climb, the narrow body and feeling of great power and acceleration give the impression of being in a luxurious sports car. The pilots appreciate this too: it is light and sensitive to handle at Mach 2 at 60,000 feet or at 170mph on landing after descent for visibility. For supersonic cruise, the flight engineer pumps fuel to the rear, moving the centre of gravity back about six feet. Full of fuel, it is heavy to manoeuvre, its essential horrid (right, and wing refuse for take-off; it is hard to keep within airport noise tolerances. Only 16 Concordes were built, and only seven are in service (through Air France, British Airways, Singapore Airlines and Braniff, as well as with British Airways and Air France.

M: U.K./France. Dt 69/76. St 84. Lt 204. Rt 4 RR/SNECMA Olympus 593 tf. Pt 100. Wt 400. R: 3,450. Alt 1,470. Oc 9.

Lufthansa



The Airbus is flown extensively in Europe by Air France and Lufthansa, and is also flying in the U.S.A., Korea and Thailand.

Airbus A300. The first twin-engined Jumbo, with a spacious cabin only slightly smaller than the 747's, it is built mainly by French, West German, British, Dutch and Spanish companies established in Toulouse. It is a sensible-looking aircraft, built conventionally but with very advanced systems and certified for automatic landings in fog. Its two vast engines, identical to the DC-10's, give it good, quiet take-off performance.

M: International Dt 72/74. St 147. Lt 176. Rt 2 GE CF6-50 tf. Pt 345. Wt 547. St 578. R: 2,620. Oc 128.

Aviaco

Boeing 707. The most extensively used of the first generation of jets, it quickly pushed the remaining piston-engined aircraft off the routes, chiefly because its mechanically simpler engines needed overhauling after periods of thousands, rather than hundreds of hours. A most efficient aircraft, very reliable, and with good passenger appeal, it has roomy accommodation, it has earned the respect of aircrew – although some first-generation jets were experimental early on, before pilots learned the new game. It has always been relatively compact to fly well, particularly in crosswinds, because of its heavy undercarriage-track, narrow-track undercarriage and low engine pods; but pilots soon adapt to this and find it very satisfying.

M: U.S.A. Dt 54/58. St 146. Lt 151. Rt 4 P&W JT3D tf. Pt 189. Wt 333. R: 4,200. Oc 65.

British Airways

British Aerospace (BAC) **VC10.** The VC10 has a devoted following among regular passengers for two reasons: its rock-like solidity in any kind of rough air, and a very accommodating undercarriage, which turns an unusual proportion of landings into 'greasers'. Designed with the 'hot and high' airfields of the old British Empire routes in mind, it is less economical than other aircraft of the same generation on the North Atlantic. The sweep of its body-line up to the high tailplane carried it the title 'Super Banana' in the U.S. Pilots like its power and its ease of handling after engine failure – from the grouping of the four engines close together at the tail.

M: U.K. Dt 62/64. St 146. Lt 172. Rt 4 RR Conway tf. Pt 187. Wt 335. St 580. R: 4,720. Oc 40.

British Aerospace (Hawker Siddeley) **Trident.** Used mainly by British Airways in its early days, the Trident will be remembered for its pioneering role in automatic flight. Certified to land in zero visibility, it can also take-off automatically. Its three engines are buried in the tail, which helps it to land well. Passengers, some of whom sit in rearward-facing seats, often notice the automatic throttles changing the engine power during the descent to touchdown. It has an offset streamlined hump on the Tridents 1E version, five engines – three for normal use, a boost engine (with plastic compressor blades) for 'hot and high' take-offs, and an auxiliary power unit for ground services.
M: U.K. Dt 63/64. St 98. Lt 115. Rt 3 RR Spey tf. Pt 115. Wt 150. St 369. R: 911. St 750. Rt 1,605. Oc 117.

British Airways

Aeroflot

Ilyushin Il-86. The first Soviet Jumbo made its maiden flight on 22nd December 1976. It is intended for medium ranges, and has a wide-bodied cabin with two aisles. An unusual boarding system allows passengers to enter from ground level up self-contained stairs, leaving coats with stewardesses at the entrance deck before going up staircases which lead to the main deck. Besides the usual main wheels under the wings, it has a third set under the fuselage.
M: U.S.S.R. Dt 76/78. St 158. Lt 192. Rt 4 Kuznetsov NK-86 tf. Pt 350. Wt 454. S: 590. R: 1,460. Oc –.

Continental

Boeing 727. Boeing departed from their own traditions when in 1960 they designed the short-medium range 727 with three engines at the rear of the fuselage. It worked: the 727 became the first commercial jetliner to reach over 1,000 sales. There are now about 1,500 flying, and ten more are being produced each week. Its upper fuselage section is identical to that of the earlier 707, and it shares many common parts, though all its controls are fully powered by hydraulics. Ingenious flaps and slats give it a good take-off performance with a load of 163 passengers. The cabin, in the latest version, has been given a wide-bodied look by the use of mid-deckings and lighting. Very popular with aircrew, it is precise and light to fly, and it has a good safety record.
M: U.S.A. Dt 63/64. St 106. Lt 133. Rt 3 P&W JT8D tf. Pt 169. Wt 209. R: 890. St 2,300. Oc 7,831.

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AIRLINERS

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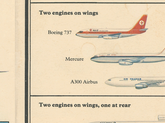
isbn 0 00 685453 9

This first things to note for identifying airliners are the number and placing of engines, and shapes of tail-sections. The quick key below shows jet-powered types in current general use, omitting the unmistakable Concorde and VFW 614.

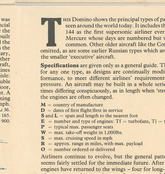
Four engines on wings

Two engines on wings



Two engines on wings, one at rear

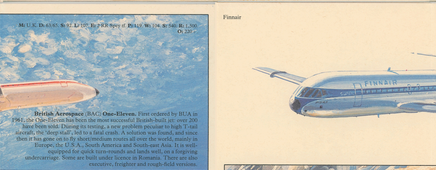
All engines at rear



Balkan

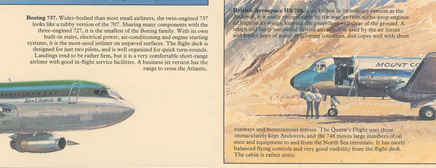
Tupolev Tu-154. About 200 Tu-154's have been produced, starting some five years after the Boeing 727, which it closely resembles. With slats on the leading edges of the wings and triple-slotted flaps on the trailing edges, its take-off performance is very good. The main landing-gear bogies have six wheels each, and the aircraft can land on fairly rough runways. All its control surfaces are hydraulically powered, and later versions are equipped for automatic landing. Navigation is done by a computer, and displayed on a moving map. This aircraft appears to be one of the most efficient of the Soviet fleet.

British Aerospace (BAC) **One-Eleven.** First ordered by BUA in 1961, the One-Eleven has been the most successful 'dash-built' jet since 200 have been delivered to 30 operators. Its wings are based on those of the Viscount, the 'dash-built', but to a final crank. A solution was found, and since then it has gone on to fly short/medium routes all over the world, mainly in Europe, the U.S.A., South America and South-east Asia. It is well-equipped for quick turn-rounds and lands well, on a forgiving undercarriage. Some are built under licence in Rumania. There are also executive, freighter and rough-field versions.



Mu: U.K. Dt 63/65. St 67. Lt 107. Rt 2 RR Spey tf. Pt 63. Wt 134. Rt 740. R: 1,700. Oc 249.

Finnair



Aerospatiale Caravelle. This has been one of the most successful of first-generation jets. Unmistakable in appearance, it has a smooth, streamlined cross-section, triangular-shaped windows and a rather dainty curved fin and tail. It has grown over the years in length and power, and newer versions can carry up to 130 passengers over about 1,500 miles. On the 9th January 1969 an Air France Caravelle made the world's first fully automatic landing in zero visibility. Caravelle III visibility – in this case it was 450 feet or 200 metres.

Mc: France. Dt 55/59. St 112. Lt 105. Rt 2 PrW JT8D tf. Pt 130. Wt 101. St 500. R: 1,400. Oc 262.

Aer Lingus

Boeing 737. Wider-bodied than most small airliners, the twin-engined 737 looks like a tubby version of the 707. Sharing many components with the 727, it resembles the 727 in its cockpit layout. Its cabin is light and well-lit, built-in stairs, electrical power, air-conditioning and engine starting systems, it is the most-used jetliner on unpaved surfaces. The flight deck is designed for just two pilots, and is well organized for quick turn-rounds. Landings tend to be rather firm, but it is a very comfortable short-range airliner with good in-flight service facilities. A business jet version has the range to cross the Atlantic.

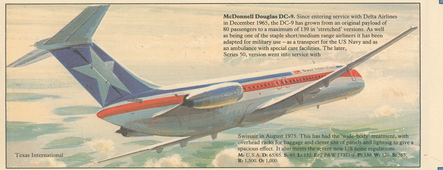
Mu: U.S.A. Dt 67/68. St 93. Lt 100. Rt 2 PrW JT8D tf. Pt 130. Wt 115. St 575. R: 2,370. Oc 600.

Mount Cook Airlines, New Zealand

Vickers Viscount. The world's first turbine-powered airliner, the Viscount was the queen of the skies. It operated the most important European routes and was soon in service in the U.S.A., its pressurized and comparatively quiet cabin, with large oval windows, seeming enticingly luxurious. Nearly 30 years later, it works gamely away in places like the Okavango and Shetlands, where its 71-seat loads and stability in crosswinds are still great assets.

Mc: U.K. Dt 52/53. St 64. Lt 86. Rt 4 RR Dart tp. Pt 70. Wt 72. R: 550. St 1,600. Oc 444.

Texas International



Swept-back fins, a T-tail and a high tailplane are characteristics of the DC-9. Seating 80 passengers to a maximum of 139 in 'stretched' versions. As well as being one of the staple short/medium range airliners it has been adapted for military use – as a transport for the US Navy and as an ambulance with special care facilities. The latest Series 50, version went into service with

McDonnell Douglas DC-9. Since entering service with Delta Airlines in December 1965, the DC-9 has grown from an original passenger load of 80 passengers to a maximum of 139 in 'stretched' versions. As well as being one of the staple short/medium range airliners it has been adapted for military use – as a transport for the US Navy and as an ambulance with special care facilities. The latest Series 50, version went into service with

Hang Khong, Vietnam

Antonov An-24. This hard-working Soviet aircraft looks very like the Fokker F27 Friendship, but has its two engines and shaping tail-fin. It is also heavier, which restricts its range. Designed to take off from unpaved runways, it needs quite a bit of power when it is flying, and has provision for an extra turbojet engine in the right-hand nacelle, to start the main engines and to help in the event of an engine failure. It is used by the air forces of several developing countries.

Mu: U.S.S.R. Dt 60/63. St 96. Lt 77. Rt 2 Ivchenko AI-24A tp. Pt 50. Wt 46. St 103. Rt 155. Oc 1,000 –.

Ilyushin Il-62. Looks very like the British VC10, only rather more angular. Its four engines are grouped together at the rear, around Aeroflot's familiar 'fish-tail' fairing, which is moved electrically.
Mc: U.S.S.R. Dt 62/67. St 142. Lt 174. Rt 4 Kuznetsov NK-8-4 tf. Pt 186. Wt 357. St 550. Rt 4,200. Oc 150.

CAAC, Peoples Republic of China

Aviaco, W. Germany

Fokker-VFW F28 Fellowship. This rather attractive short-haul airliner took its maiden flight in May 1967. Designed in the Dutch Fokker factories, and is built in sections in Holland, West Germany and Britain. Its engines have acoustic liners and silencers, and it carries 65 passengers with low-side-of-and landing noise levels. So far its sales have been modest – about 180. An unusual feature are the 'petal' airbrakes, which open on each side of the tail cone. A successor is being designed, with newly developed engines and carrying up to 120 passengers.

Mc: Holland. Dt 67/68. St 77. Lt 90. Rt 2 RR Spey tf. Pt 65. Wt 85. St 125. Rt 1,200. Oc 141.

VFW-Fokker VFW 614. No one could fail to recognize this aircraft, with its two engines mounted on pylons above the wings. This was adopted to protect the engines when operating from unprepared surfaces, and to keep them clear of spray when taking off from wet runways. Designed by a West German consortium, including the famous names of Heinkel and Focke-Wulf, it perhaps shows some evidence of its lineage in the shape of its nose section. Still a comparatively rare bird, used by French and West German airlines and the Luftwaffe.

Mc: W. Germany. Dt 71/75. St 71. Lt 68. Rt 2 RR/SNECMA M45H tf. Pt 40. Wt 44. St 450. Rt 740. Oc 16.

TAT, France

Norontair, Canada

De Havilland DHC-6 Twin Otter. De Havillands of Canada have always built tough little aeroplanes, capable of working in Canada's bleak flying conditions. A simple, practical aircraft, the Twin Otter flies on ambulance, freight and passenger work, and can be fitted with floats, skis, an undercarriage may be bare, fitted with 'yarn' for consonant work, with skid-wheel combinations for snow, with fat tyres for rough airstrips, or with floats for island-hopping. It is unpressurized, and rather noisy in the cabin, but needs remarkably little room for take-off and landing. The pilots share a branched control column and use throttles mounted in the cockpit roof.
Mc: Canada. Dt 65/67. St 65. Lt 52. Rt 2 PrW (Canada) PT6A tp. Pt 20. Wt 12. St 245. Rt 115. Oc 880.

De Havilland DHC-7 Dash-7. A much newer type of aircraft than it looks, it was designed from scratch as a quiet STOL (short take-off and landing) airliner. Hardly noisier than a Twin Otter in the cabin, it has remarkable lift and ability to do steep approaches and take-offs, but needs remarkably little room for take-off and landing. The pilots share a branched control column and use throttles mounted in the cockpit roof.
Mc: Canada. Dt 75/77. St 93. Lt 81.
Rt 4 PrW (Canada) PT6A tp. Pt 50. Wt 43. St 268.
R: 935. Alt 35.

(manufacturer's colours)

Dassault-Breguet Mercure. A large, quietly-styled, short-haul airliner, flying only on internal routes of France. But a possible, new version, the Mercure 200, is being studied for Russian and MacDonnell Douglas use. With more powerful engines, improved wings, fuel and a lengthened fuselage, it will carry 200 passengers over 2,000 miles.
Designed by a West German consortium, including the famous names of Heinkel and Focke-Wulf, it perhaps shows some evidence of its lineage in the shape of its nose section. Still a comparatively rare bird, used by French and West German airlines and the Luftwaffe.
Mc: U.S.A. Dt 62/63. St 65. Lt 120. Rt 2 Snecma tf. Pt 55. Wt 66. St 264. R: 1,200. Oc 1,000.

Air Inter, France

Tupolev Tu-134A. Developed as the Tu-134 at about the same time as the DC-9, it has the same engine layout, a rather more stubby undercarriage and a quieter flight deck. The new airbrake – they droop downwards, away from the fuselage. The tail cone contains an auxiliary power unit for ground services, replacing a braking parachute carried on the earlier Tu-134. Its engines are mounted high enough to provide extra cushioning on rough surfaces.

The nose cabin is unusually large, providing a downward view from the flight deck.

Mc: U.S.S.R. Dt 63/67. St 85. Lt 120. Rt 2 Soloviev tf. Pt 65. Wt 95. St 160. R: 1,240. Oc 210 –.

LOT, Poland

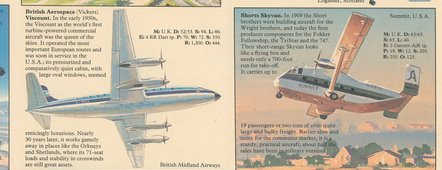
ČSA

Yakovlev Yak-40. The Yak-40 is an unusual and attractive-looking aeroplane, which has no real equivalent in the West. Large-but-not-excessive-sized, but smaller than the usual short-range feederliners. It can operate from grass airfields, carries its own power unit for engine starting, and is the most widely used short-range aircraft in the U.S.S.R. Some have been sold in Italy, France and West Germany.

Yakovlev Yak-42. Based on the Yak-40, a short-haul airliner designed for economy and easy maintenance and will operate mainly on feederliner services connecting the main trans-U.S.S.R. routes. Its three engines are mounted as much as possible to keep noise out of the passenger cabins, and should enable it to meet the increasingly severe standards controlling noise and pollution.

Mc: U.S.S.R. Dt 75/–. St 112. Lt 119.
Rt 3 Lotarev D-36 tf. Pt 120. Wt 111. St 310.
R: 1,100. Oc ?

All Nippon Airways



NAMC YS-11. Very similar in appearance to the HS 748, it is about a quarter of a century old, and has been produced in Japan by Nihon Aircraft Manufacturing Corporation. Designed and manufactured by a consortium of major Japanese firms, it represented Japan's entry into the civil aircraft market after World War II. It has sold about 180 aircraft, mainly to Japanese operators, but also to Philippines, South America and the U.S.A. Eastern Provincial Airlines operate them.
Mu: Japan. Dt 62/63. St 105. Lt 66. Rt 2 Rolls-Royce Dart tp. Pt 60. Wt 54. St 450. R: 700. Oc 182.

Fokker-VFW F27 Friendship. Seeming to have the right combination of comfort, strength and simplicity, this is probably the nearest yet to the elusive 'Dakota replacement'. Its high wings keep its engines and propellers clear of stones and dirt, yet their undersides are still accessible for maintenance.

Ansett, Australia

It is pleasant to fly, if somewhat rigid in turbulence. Fokkers designed some of the first airliners in the 1920s, and are now in partnership with the West German company VFW.
Mc: Holland. Dt 58/58. St 95. Lt 77. Rt 2 RR Dart tp. Pt 52. Wt 45. St 300. R: 1,200. Oc 691.

British Midland Airways

Hawker Siddeley Trident. Originally ordered by BEA, the Trident has been developed into a very sophisticated airliner. Its three engines are buried in the tail, which helps it to land well. Passengers, some of whom sit in rearward-facing seats, often notice the automatic throttles changing the engine power during the descent to touchdown. It has an offset streamlined hump on the Tridents 1E version, five engines – three for normal use, a boost engine (with plastic compressor blades) for 'hot and high' take-offs, and an auxiliary power unit for ground services.
Mc: U.K. Dt 63/64. St 98. Lt 115.
Rt 3 RR Spey tf. Pt 115. Wt 150. St 369.
R: 911. St 750. Rt 1,605. Oc 117.

Tristar, U.S.A.

Swearingen Metro. The growth of the commuter market in the U.S.A. is finding gaps for more small forms with eager crew, but big to-day-developments are going to this purpose. The Metro is one of the most pressurized, fast and economical, with 19 passengers flying at single-seater speeds. There is a pressurized version being developed, and it is nice at the time with a large door. It is available in 820 versions. As Statesmen, as a 'executive' carrier, 20 Metros are in use with 10 companies in the U.S.A.
Mc: U.S.A. Dt 70/73. St 43. Lt 52. Rt 2 P&W (Canada) PT6A tp. Pt 20. Wt 12. R: 265. Oc 1,000.

Air Liberia

Britten-Norman Trislander. Developed from the Islander, by the simple expedient of adding 7½ feet of fuselage in front of the wing and putting another Lycoming engine in the tail fin. This third engine also gives a better ability to cope with a failure on take-off, and the Trislander can lift the standard-than-most commuter aircraft. It is a little slow, but very manoeuvrable and can use small airstrips.
Mc: U.K. Dt 70/71. St 13.
Lt 44. Rt 3 Lycoming tp. Pt 18. Wt 9. St 165.
R: 210. Alt 10 –.

Britten-Norman Islander. This was built as a private venture until financial help was given by the Belfast and Fairey Group. It is now built in Belgium, Romania and the Philippines, and finished in the Isle of Wight. There are also military-type versions, and stretched and tapered versions. An attractive aircraft, designed along very simple lines to keep costs down. There is an auto-eight passengers sit in four double seats, and there is room for a pilot while a ninth sits beside the pilot. A version powered by two Lycoming turboprops cruises at about 200mph.
Mc: U.K. Dt 67/68. St 49. Lt 76.
Rt 2 Lycoming tp. Pt 29. Wt 6. St 90.
R: 704. Alt 900.

Logansair, Scotland

Shorts Skyvan. In 1969 the Short brothers were building aircraft for the Wright brothers, and today the firm produces components for the Fokker Fellowship, the TriStar and the 747. Their short-range Skyvan looks like a flying box and needs only a 700-foot run for take-off. It carries up to 19 passengers or two tons of even quite large and bulky freight. Rather slow and noisy for the commuter market, it is a sturdy, practical aircraft, about half of its sales have been as military versions.

Summit, U.S.A.

Shorts SD3-30. Clearly derived from the Skyvan, the 3-30 looks much sleeker, with a longer fuselage and nose, and a much lower tail cabin. Designed for the growing commuter market, it is flying in Holland, Scandinavia, West Germany, and with several US commuter lines. It is setting down well, attracting passengers and well liked by crews. In its military version, a large rear door opens and can take in a Land-Rover.
Mc: U.K. Dt 74/76. St 71. Lt 86. Rt 2 PrW (Canada) PT6A tp. Pt 30. Wt 23. St 225. R: 450. Oc 90.

Golden West Airlines, U.S.A.

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The Cockpit of a Boeing 747

1	Engine start switches	9	Fuel flow gauges	17	Captain's seat
2	Radio panel	10	Throttle levers	18	Control column
3	Radio altimeter	11	Throttle levers	19	Airspeed indicator
4	Pressure altimeter	12	Inertial navigation system	20	Artificial horizon
5	Radio compass	13	Inertial navigation system	21	Rudder pedals
6	Artificial horizon	14	Captain's control column	22	Pitch trim control
7	Temperature gauges	15	Rudder/brake pedals		
8	Radio compass	16	Weather radar display		